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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,119	04/11/2001	Cory D. Hess	WJT002-0010	6451

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EXAMINER	
FERRIS III, FRED O	

ART UNIT	PAPER NUMBER
2128	

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/833,119	HESS, CORY D.	
	Examiner	Art Unit	
	Fred Ferris	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 April 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☒ Claim(s) *20-24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 April 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *01/16/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-24 have been presented for examination based on applicant's disclosure filed on 11 April 2001. Claims 1-19 have been rejected by the examiner. Claims 20-24 are objected to.

Drawings

2. The examiner has approved applicant's drawings filed on 11 April 2001.

Claim Interpretation

*3. Applicants are claiming limitations relating to a method and system for determining the **design margin** of an optical span including the steps of **designing an operable optical span** and performing **margin analysis** to determine the amount of change in the operable optical span before the change becomes **inoperable**. Applicant's specification has defined the term "**optical span**" to mean the **optical fiber transmission path** (page 2, line 5). The examiner has interpreted the term "**operable optical span**" to simply mean comparing **received power** at the received end of the optical span to the **desired** (predetermined) **received signal** spectrum. (i.e. measured power to **desired** measured power, Figs. 4C & 4D) This interpretation is based on the description beginning on page 9, line 18 to page of the specification. The examiner has also interpreted the term "**margin analysis**" to simply mean the process of applying an incremental change to one or more of the network component values and determining when the operable optical span becomes inoperable. (i.e. exceeds the **desired** value)*

This interpretation is based on the description beginning on page 11, line 3 of the specification. The examiner notes that these features are generally inherently provided by commercially available network simulators such as OPNET Modeler, BONeS, and COMNET since these products provide modeling and manipulation of simulated network transmission paths and network components so that system performance can be evaluated prior to system implementation and equipment purchase. (See: "Simulation of Communications Networks", A.M. Law, Section 2.0, for example)

Specification

4. The disclosure is objected to because of improper arrangement of the specification. Applicant's specification beginning on page 17 contains text that includes a table of contents and numbered section headings that are not in proper PTO format. Applicants are reminded of proper content of the disclosure (See MPEP 601, 608).

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)),

and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)

(e) BACKGROUND OF THE INVENTION.
(1) Field of the Invention.
(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.

(f) BRIEF SUMMARY OF THE INVENTION.

(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).

(h) DETAILED DESCRIPTION OF THE INVENTION.

(i) CLAIM OR CLAIMS (commencing on a separate sheet).

(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Applicant's specification beginning on page 17 appears to contain text taken from the inventions product User's Manual. The examiner suggests that applicants amend the specification to include the text beginning on page 17 as an appendix to the specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Network Simulations with OPNET", X. Chang, Proceedings of 1999 Winter Simulation Conference, IEEE 1999 in view of U.S. Patent 5,760,940 issued to Frigo.

Independent claim 1 is drawn to the following limitations:

- method for determining design margin of optical span by steps of:
- designing an operable optical span;
- performing margin analysis to determine how much change operable optical span can tolerate before becoming inoperable.

Regarding independent claim 1: Chang discloses the commercially available OPNET network simulation and modeling tool used for the development and analysis of communications networks. The OPNET Modeler provides a GUI based user interface for developing a simulated network model including a Network Editor, Node Editor, Process Editor, Simulation & Debugging tool, Probe editor, Analysis tool, Filter tool, Animation tool, and a Model Library that includes models for popular network architectures (fiber optic, LAN, Ethernet, x.25, etc.) and models for popular vendor

network hardware (routers, amplifiers, etc.). (See: OPNET Modeler product brochure, Mil 3 Inc., 1999, Model Library, Standard Models)

Chang discloses the elements of the claimed limitations of the present invention as follows:

- designing an operable optical span: Chang discloses tools for designing an optical network including all elements of an optical fiber transmission path. As noted above, and optical span is defined as the optical fiber transmission path and the operable optical span is determined by comparing received power at the received end of the optical span to a predetermined (desired) ***received signal*** *spectrum. Therefore, Chang teaches designing an optical span by way of the features provided in the OPNET Network editor. (see page 309, Section 2.2.1, Figs. 8 & 9) The OPNET Model library includes models for fiber (optical) networks. (See: OPNET Modeler product brochure, Mil 3 Inc., 1999, Standard Models, Fiber Distributed Data Interface (FDDI))*

- performing margin analysis to determine how much change operable optical span can tolerate before becoming inoperable: Chang also teaches performing an analysis of the network via the OPNET Analysis Tool (page 310, Section 2.3.2) to determine the effect of changing network and node (component) parameters. This analysis includes the ability to view and manipulate the statistical data and display the analysis results in the form of graphs. (page, 311, Figs. 4 & 5) Hence, Chang teaches performing an analysis and determining where the effect of the changes to the network are within desired (or undesired, i.e. inoperable) limits.

Chang does not explicitly disclose determining the margin of the optical span.

Frigo teaches determining when a specified threshold power margin at the destination of an optical network fails to meet a threshold (selected) power margin. (Abstract, CL1-L38-42, CL2-L19-21) Hence, Frigo teaches determining (by comparing) when power at the received end of the optical span (network) is inoperable by detecting when the power exceeds a threshold (selected) power margin. (i.e. the measured power exceeds ***desired*** *measured power)*

It would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to modify the teachings of Chang relating to the use of OPNET network simulation and modeling tools in the development and analysis of optical networks, with the teachings of Frigo relating to determining when a specified threshold power margin at the destination of an optical network fails to meet a threshold (selected) power margin, to realize the claimed invention. An obvious motivation exists since, as referenced in the prior art, the use of network simulation tools (OPNET, BONeS, etc.) is beneficial in determining the system wide impact of making local (component level) changes to the network and insuring that performance objectives are met before actual system implementation. (See A.M. Law et al, page 73, Section 2) Further, the level of skill required by an artisan to realize the claimed limitations of the present invention is clearly established by both references. (See: Chang/Frigo, Abstracts) Accordingly, a skilled artisan having access to the teachings of Chang and Frigo would have knowingly modified the teachings of Chang with the teachings of Frigo to realize the claimed elements of the present invention.

Per dependent claim 2: Chang teaches presenting the OPNET analysis results to the user via display graphs. (page 310, Section 2.3.2, Figs. 3-14)

Per dependent claim 3: Chang discloses OPNET's Node Editor for creating and modeling components (modules) that make up the optical network. (page 309, sections 2.1.1 and 2.1.2) OPNET's Model Library includes models for popular vendor hardware component (devices) modules. (See: OPNET Modeler product brochure, Mil 3 Inc., 1999, Standard Models, Vendor Device Models)

Per dependent claim 4: Chang and Frigo disclose the elements of performing margin analysis determining meeting performance criteria as previously cited above. In addition, Chang discloses user-defined changes are made to performance criteria via the OPNET Analysis Tool (page 310, Section 2.3.2).

Per dependent claim 5: Chang discloses setting up network performance criteria values (power, s/n ratio, etc.) using OPNET's Network Model and Simulation Editor. (page 309, Section 2.1.1, 2.2.1)

Per dependent claims 6-8: Chang discloses OPNET's ability to analyze the effect of a change in position of components (amplifiers, fiber optic cable segments and length, etc.) relative to other components in the system via the Network Model (2.1.1), Node Model (2.1.2), and Analysis Tool (2.3.2). OPNET's Model Library includes models for popular vendor hardware component (devices) modules. (See: OPNET Modeler product brochure, Mil 3 Inc., 1999, Standard Models, Vendor Device Models)

Per dependent claim 9: Chang discloses OPNET's ability to analyze the effect of the number of channels in the design via the Network Model (2.1.1).

Regarding independent claim 10: Independent claim 10 merely claims the optical route design system and processor capable of performing the margin analysis limitations recited in independent claim 1. In this case, the OPNET processor is realized using a standard engineering PC workstation that includes a graphical display. (see Chang page 308, paragraph 2) This claim is therefore rejected using the same reasoning as cited above for independent claim 1.

Per dependent claim 11: Chang discloses OPNET's Node Editor for creating, modeling, and storing in a database the components (modules) that make up the optical network. (page 309, sections 2.1.1 and 2.1.2)

Per dependent claim 12: Chang and Frigo disclose the elements of performing margin analysis and determining meeting performance criteria as previously cited above. In addition, Chang discloses user-defined changes are made to performance criteria via the OPNET Analysis Tool (page 310, Section 2.3.2).

Per dependent claim 13: Chang discloses setting up network performance criteria values (power, s/n ratio, etc.) using OPNET's Network Model and Simulation Editor. (page 309, Section 2.1.1, 2.2.1)

Per dependent claims 14-16: Chang discloses OPNET's ability to analyze the effect of a change in position of components (amplifiers, fiber optic cable segments and length, etc.) relative to other components in the system via the Network Model (2.1.1), Node Model (2.1.2), and Analysis Tool (2.3.2). OPNET's Model Library includes models for popular vendor hardware component (devices) modules. (See: OPNET Modeler product brochure, Mil 3 Inc., 1999, Standard Models, Vendor Device Models)

Per dependent claim 17: Chang discloses OPNET's ability to analyze the effect of the number of channels in the design via the Network Model (2.1.1).

Regarding independent claim 18: Independent claim 18 merely claims the method for analyzing the performance of the optical span design by selecting network components and performing the margin analysis on the operable optical span using the limitations previously recited in independent claim 1. In this case, Chang discloses the OPNET Node Model (2.1.1) for component selection and Analysis Tool (2.3.2) for design analysis as previously noted above. This claim is therefore rejected using the same reasoning as cited above for independent claims 1 and 10.

Per dependent claim 19: As noted above, the combination of Chang and Frigo renders obvious the limitations relating to analyzing and determining the design of an operable optical span. In addition OPNET, as disclosed by Chang, also teaches analyzing a received signal spectrum and adjusting parameters since the OPNET Analysis Tool (page 310, Section 2.3.2) can determine the effect of changing network component parameters. This analysis includes the ability to view and manipulate the statistical data and display the analysis results in the form of graphs. (page, 311, Figs. 4 & 5) Hence, Chang teaches performing an analysis and determining when the effect of the changes to the network are within desired (or undesired, i.e. inoperable) limits as previously cited above.

Allowable Subject Matter

6. Claims 20-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, ***and*** *issues relating to 35 USC 101 rejections can be resolved. In particular, dependent claim 20 includes an additional specific sequence of steps of that is not expressly disclosed in the prior art. Theses steps include:*

- receiving incremental change parameters made to operable optical span;
- incorporating changes into component in accordance with case type;
- analyzing changed optical span & determining whether span is operable;
if yes,
- incorporating next incremental change into the component IAW case type and repeating analyzing step and determining until changed span not operable;
if not,
- identifying previous incremental change as margin limit for component IAW case type;
- determining whether all optical span components and case types have been analyzed;
if not,
-incorporating incremental change into next component IAW case type;
-repeating analyzing step and determining steps until all components & case types analyzed;

Claims 21-24 depend from claim 20.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Careful consideration should be given prior to applicant's response to this Office Action.

U.S. Patent 5,680,326 issued to Russ et al discloses estimating the optimal spare capacity of a network.

U.S. Patent 5,515,367 issued to Cox et al teaches optical network planning.

U.S. Patent 6,763,326 issued to Watkins et al teaches fiber optic network simulation and planning.

"Simulation of Communications Networks", A.M. Law et al, Proceedings of 1996 Winter Simulation Conference, IEEE 1996 teaches network simulation and planning tools.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 571-272-3778 and whose normal working hours are 8:30am to 5:00pm Monday to Friday. Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 571-272-3700. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jean Homere can be reached at 571-272-3780.

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